Travel Demand Model Fact Sheet

Identification

Model Name: Radcliff / Elizabethtown Model Area: Hardin and Meade Counties, KY

MPO Travel Demand Model

Purpose of Model: To support development of Long Range Transportation Plan

Model Developer: Wilbur Smith Associates Mod. Software Used: TransCAD

Date Model Work Began: August 2003 Date Finished: August 2004

Model Years:	Base Yr:	Fut. Yr:	Interim Years:				
	2003	2030	N / A				

Technical Specifications

TAZs / # links: 338 TAZ (254 in Hardin Co. and 84 in Meade Co.)
1977 Network Links (475 which are centroid connectors)

Trip Rates: By Income (5.0 trips / hh for low income; 9.0 trips / hh for medium income; 12.0 trips / hh for high income)

Trip Generation Equations:

- HBW productions = Number of Households x (HBW trip rate) x (observed proportion of HBW trips)
- HBNW productions = Number of Households x (HBNW trip rate) x (observed proportion of HBNW trips)
- NHB productions = Number of Households x (NHB trip rate) x (observed proportion of NHB trips)
- HBW attractions = 1.45 trips/retail employee x Number of retail employees + 1.45 trips/non-retail employee x Number of non-retail employees
- HBNW attractions = 9.0 trips/retail employee x Number of retail employees + 1.2 trips/non-retail employee x Number of non-retail employees + 0.9 trip/household x Number of households
- NHB attractions = 4.1 trips/retail employee x Number of retail employees + 0.95 trips/non-retail employee Number of non-retail employees + 0.5 trips/household Number of households

EE Methodology:

E-E trips and E-I trips for major routes within the KYSTM were identified; For other 'major' routes (i.e., classified as arterial or above), the Pigman equations were applied. The remaining stations were considered to have E-I trips only. Once the number of E-E trips were known, a combination of the KYSTM and NCHRP 365 methodology was applied.

BPR Equations Used:

The enhanced BPR curve was used, where alpha = 0.05 for signalized facilities and 0.20 for unsignalized facilites; beta = 10)

Assignment Methodology:

An user-equilirium procedure was used for this model, using the BPR parameters noted above. Each assignment was allowed a maximum of 20 iterations to converage.

Truck Model: N / A Mode Choice: N / A

Time of Day Modeling: Daily Model Running Time: 1 min. Air Quality Component: AQ codes included in network

Script / Batch File Description (How Developed?)

The model is run using the GISDK user interface originally developed by WSA for the Madisonville, KY model. The interface was developed using GISDK code and Visual Basic applications.

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Calibration/Validation

RMSE: 52.49% (Please see technical documentation for explanation)

Screenline Summary - Y/N: Y How Many: 4

Screenline 1: External Stations
Screenline 2: Between Radcliff and Elizabethtown
Screenline 3: Hardin / Meade County Border
Screenline 4: South of Elizabethtown

Methods Used for Calibration:

Trip Rate Adjustments; Variation of links included in validations (state-maintained versus non-state-maintained); testing of different gamma function inputs; centroid connector adjustments

Urban / Rural Comparison:

Unusual Calibration Measures Taken (K-Factors; Matrix Estimation):

Nothing too unusual

VMT Model / VMT KYTC Comparison:

The higher functionally classified rural routes in Hardin County closely match the HPMS values. The minor collector and rural local facilities do not match the HPMS values well. Some of the difference may rest in the mileage included in the travel demand model compared to the sample mileage included in the HPMS reporting.

VMT Increase In Future Year:

An overall increase of 62% from the base year

Data Collection/Network Development

Special Counts - Y/N: Yes How Many? 5 Where? See Below

1: Meade County - KY 1500 - Station 313
2: Hardin County - US 31W - Station 145
3: Hardin County - US 31W - Station B10
4: Hardin County - Western Kentucky Parkway - Station 569
5: Hardin County - Bluegrass Parkway - Station 168

SE Data: Base Data Source: Population/Employment Ratio: 0.386

Population / Households - 2000 - United States Census Bureau; Forecasted to Base Year of 2003 based 2003 Control Totals from the Kentucky State Data Center; local input was used to adjust TAZ values to relect 2003 control totals

Employment - 2002 - Dun & Bradstreet Employment Data; Worked with local agencies to forecast the data to 2003

Future Estimate Source:

Population / Households - 2030 - Kentucky State Data Center; 2030 Employment - Based on Woods & Poole Forecasts; Forecasts were developed through conversations / meeting with local planners

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Base Network Developed From?:

Line File - Office of Geographic Information: (http://ogi.ky.gov/data/trans/transdwnld.htm)
Attributes (http://transportation.ky.gov/planning/data/his_extracts/his_extracts.shtm)

Other Data (e.g. Origin-Destination): Included Three (3) External Stations at Fort Knox

Other Networks:

E + C: Build for 2030 using project committed with construction funding in the current Six Year Highway Plan

Scenarios / Alternative Networks:

Over 50 networks were tested as part of the Long Range Tran Plan